

IN THE CLAIMS

1. (Currently Amended) A transport element, comprising:
a port group comprising a plurality of geographically distributed ports;
point-to-multipoint connectivity between the ports; and
an identifier operable to represent the port group as a single element to disparate
elements and associated with a single network address.

2. (Original) The transport element of Claim 1, wherein the transport element is
defined in a transport network, the identifier operable to represent the port group as a single
element to an external node outside the transport network.

3. (Original) The transport element of Claim 2, wherein the port group is
operable to participate with the external node in protocol exchanges.

4. (Original) The transport element of Claim 1, wherein the transport element
comprises a transport router interconnecting a set of subtending Internet protocol (IP) routers.

5. (Original) The transport element of Claim 1, wherein the transport element
comprises a transport Ethernet switch interconnecting a set of subtending Ethernet switches.

6. (Original) The transport element of Claim 1, wherein the transport element
comprises a transport Frame Relay switch interconnecting a set of subtending Frame Relay
switches.

7. (Original) The transport element of Claim 1, wherein the port group is user
protocol independent and transparently interconnects a plurality of external ports of an
external network.

8. (Original) The transport element of Claim 1, wherein the transport element is defined in a transport network including a plurality of transport elements, further comprising the transport element unaware of an internal topology of the transport network outside of the transport element.

9. (Original) The transport element of Claim 1, wherein the transport element is defined in a transport network including a plurality of transport elements, further comprising the transport element unaware of topologies of the other transport elements in the transport network.

10. (Original) The transport element of Claim 1, further comprising a primary processor for the transport element, the primary processor operable to generate routing information for the transport element and to distribute the routing information to the ports in the port group for traffic processing.

11. (Original) The transport element of Claim 10, wherein the routing information comprises a routing information base (RIB), further comprising a secondary processor for each port in the port group, the secondary processor operable to receive the RIB from the primary processor and to generate a forwarding information base (FIB) for the port based on the RIB.

12. (Original) The transport element of Claim 1, further comprising a set of high-speed links directly connecting the ports of the port group.

13. (Original) The transport element of Claim 1, further comprising multipoint-to-multipoint connectivity between the ports.

14. (Original) The transport element of Claim 1, further comprising each port operable to receive Internet protocol (IP) packets, to add an internal transport overhead to the IP packet to generate an internal packet, and to transmit the internal packet directly on an optical link to an egress port in the port group.

15. (Original) The transport element of Claim 1, further comprising the geographically distributed ports connected in a non-ring topology.

16. (Currently Amended) A transport network, comprising:
a plurality of geographically distributed nodes;
each node including a plurality of ports;
a transport element including a port group having a plurality of ports from the
geographically distributed nodes and associated with a single network address; and
point-to-multipoint connectivity between the ports of the port group.

17. (Original) The transport network of Claim 16, further comprising an internal
address space for the transport network independent from an external network.

18. (Original) The transport network of Claim 16, further comprising an identifier
operable to represent the port group as a single element within the transport network and
external to the transport network.

19. (Original) The transport network of Claim 16, further comprising software
stored on computer-readable media, the software operable to selectively define the point-to-
multipoint connectivity between the ports of the port group.

20. (Original) The transport network of Claim 16, further comprising:
a plurality of transport elements each including a port group having a plurality of
ports from the geographically distributed nodes; and
point-to-multipoint connectivity between the ports of each port group.

21. (Original) The transport network of Claim 16, further comprising an identifier
operable to represent the port group as a single element to an external node, the port group
operable to use the identifier to participate with the external node in protocol exchanges.

22. (Original) The transport network of Claim 16, further comprising the transport
element unaware of an internal topology of the transport network outside of the transport
element.

23. (Original) The transport network of Claim 16, further comprising a plurality of transport elements, the transport element unaware of topologies of the other transport elements in the transport network.

24. (Original) The transport network of Claim 16, further comprising:
each node including a plurality of processors operable to operate the ports of the node; and
at least one processor selectively assignable to control the transport element.

25. (Original) The transport network of Claim 24, further comprising a processor of a node assigned to control the transport element, the processor operable to generate routing information for the transport element and to distribute the routing information to the ports in the port group for traffic processing.

26. (Original) The transport network of Claim 16, further comprising a set of high-speed links directly connecting the ports of the port group.

27. (Original) The transport network of Claim 16, further comprising multipoint-to-multipoint connectivity between the ports.

28. (Original) The transport network of Claim 16, further comprising each port of the port group operable to receive Internet protocol (IP) packets, to add an internal transport overhead to the IP packet to generate an internal packet and to transmit the internal packet directly on an optical link to an egress port in the port group.

29. (Original) The transport network of Claim 16, further comprising the ports in the port group connected in a non-ring topology.

30. (Currently Amended) A node for a telecommunications network, comprising:
a first port and a second port each including a receive-transmit pair (RTP), the RTP including a high-speed demultiplexer operable to process ingress traffic, a high-speed multiplexer operable to process egress traffic, and an interface to an external network connected to an internal network including the node, the first and second port associated with disparate network addresses;

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a processing system operable to store a first routing model for a first port group including the first port and at least one geographically distributed port and store a second routing model for a second port group including the second port and at least one geographically distributed port; and

the first port programmable to process traffic based on the first routing model and the second port programmable to process traffic based on the second routing model.

31. (Original) The node of Claim 30, wherein the first routing model comprises only the topology of the first port group and the second routing model comprises only the topology of the second port group.

32. (Original) The node of Claim 30, the processing system further comprising a first central processing unit (CPU) operable to operate the node and a second CPU operable to be a primary CPU for the first port group, the primary CPU operable to generate the routing model for the first port group and to distribute the routing model to each of the ports in the first port group.

33. (Original) The node of Claim 32, wherein the first CPU is operable to store the second routing model and to allow a remote primary CPU for the second port group to control the second port as part of the second port group.

34. (Currently Amended) A method for provisioning a transport element in a transport network, comprising:

defining at least one port group in the transport network, the port group comprising a plurality of ports from geographically distributed nodes of the transport network;

defining point-to-multipoint connectivity between the ports in the port group; and
representing the port group as a single entity to an external network and associated
with a single network address.

35. (Original) The method of Claim 34, further comprising:

discovering a topology of the port group; and

generating routing information based on the topology of the port group to define the point-to-multipoint connectivity between ports of the port group.

36. (Original) The method of Claim 35, further comprising:

generating the routing information at a centralized location for the port group; and

distributing the routing information to each of the ports in the port group.

37. (Original) The method of Claim 34, wherein the transport element is a transport router and the identifier comprises a router identifier.

38. (Original) The method of Claim 37, further comprising peering the transport router with subtending routers.

39. (Original) The method of Claim 34, further comprising:

assigning a primary processor to the port group; and

providing a local processor to each port of the port group.

40. (Original) The method of Claim 39, further comprising:
discovering a topology of the port group with the primary processor;
generating routing information at the primary processor based on the topology of the
port group; and
distributing the routing information to the local processors for each port.